

INDIAN HEAD DIVISION

2001 YEAR IN REVIEW

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A MESSAGE FROM THE COMMANDER AND EXECUTIVE DIRECTOR

Supporting the warfighter of today, anticipating their needs for tomorrow, and making discoveries for the generation after next, guide the work accomplished at Indian Head Division, Naval Surface Warfare Center (IHDIV/NSWC).

In 2001, IHDIV continued to push the envelope in providing the warfighter with the safest and most advanced energetics products and services for immediate military requirements. Over the past year, innovative solutions were realized within the CAD/PAD (cartridge actuated devices, propellant actuated devices), explosives development, and warfighter training systems.

The CAD/PAD Program's Supply Process Reengineering Team won the David Packard Award (Navy category) for Excellence in Acquisition for reengineering the CAD/PAD re-supply process. This team developed a paperless supply support method that reduces their supply lead-time from 120 to 7 days, saving the Navy approximately \$3.2 million each year. U.S. military pilots stationed around the globe now have the needed equipment and can perform their jobs more reliably and safely due to the advancements made in this program.

Developing new explosives is one dimension of the energetics business. Transitioning these new explosives into safe and serviceable weapons is another. In FY 01 a 13th new explosive, PBXW-17, was added to the list of Navy-qualified explosives deployed in over 43 Navy, Army, Marine Corps, and Air Force weapons, all within the last decade, an achievement unmatched by anyone in the industry. PBXW-17 is currently being used in the Marine Corps Anti-Personnel Obstacle Breaching System (APOBS) as the main explosive charge.

By the end of FY 01 an additional IHDIV formulation, PBXIH-135, was gaining much attention as a newly qualified thermobaric explosive. The events of September 11th catapulted the need for a capability to defeat tunnels and deeply buried targets. IHDIV experts were called upon to provide the energetic solution, as PBXIH-135 was selected as the thermobaric bomb fill for the Air Force BLU-109 bombs. This new thermobaric bomb, designated as BLU-118/B, was developed within 67 days and subsequently supported Operation Enduring Freedom.

The IHDIV-developed Integrated Maritime Portable Acoustic Scoring and Simulator (IMPASS) is an integral component of the Virtual At-Sea Training (VAST) system, a new effort of the Office of Naval Research that offers another option for live-fire training exercises. This innovative approach will enable Navy ships to conduct cost-effective, live-fire exercises and supplementary training at sea to prepare for forward area deployment and will provide related proficiency training during routine operations in theater.

In looking to the future, IHDIV is actively involved in identifying needs and opportunities of our military. Indian Head Division is applying Microelectromechanical Systems (MEMS) technology to meet future Navy requirements to reduce the size of torpedo safe and arm (S&A) components. MEMS technology will meet the Navy's needs to reduce S&A size and weight by a factor of ten and will provide high sensor accuracy, thereby improving torpedo capability. In FY01 a new state-of-the-art MEMS Cleanroom facility opened at IHDIV. The Class 10,000 MEMS Cleanroom will provide an environmentally-controlled setting for R&D involving the integration of energetic materials (explosives and propellants), post-fabrication processing, MEMS prototype assembly and packaging, and full-scale testing. The opening of the MEMS Cleanroom further enhances the position of IHDIV as the national hub for energetics research, and a leader in MEMS research and development.

Also carrying out a Defense mission are five major military tenant commands that are resident at Indian Head: the Naval Ordnance Safety and Security Activity, the Naval Explosive Ordnance Disposal Technology Division, the U.S. Marine Corps Chemical and Biological Incident Response Force, the Naval Sea Logistics Center Detachment Atlantic and the Joint Interoperability Test Command. Although these tenant commands have different missions, they share a common focus with IHDIV to meet our nation's military requirements. We work together as a team to ensure our continued joint success and recognize that the surrounding community is part of that team.

This 2001 Year in Review is testimony to the achievements of a proud U.S. Military facility supported by over 2,800 IHDIV and tenant command employees. Welcome and enjoy the 2001 Year in Review.

CAPT Marc A. Siedband
Commander



Mrs. Mary E. Lacey
Executive Director



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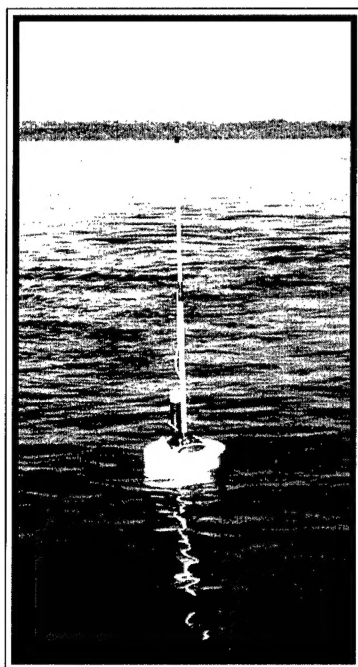
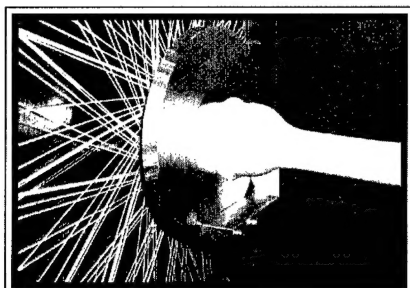
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Honorary Employee Award Winners

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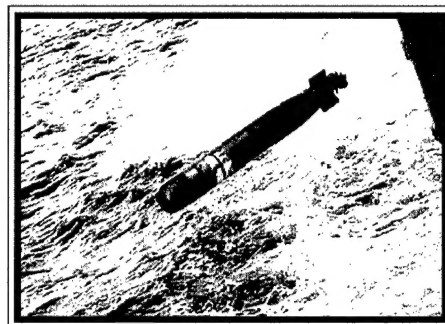
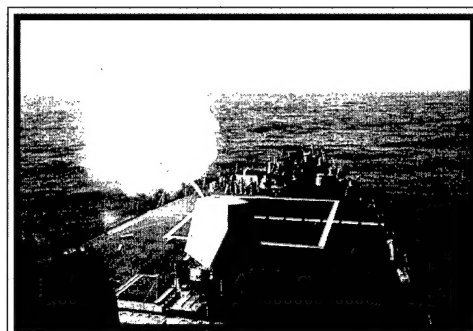
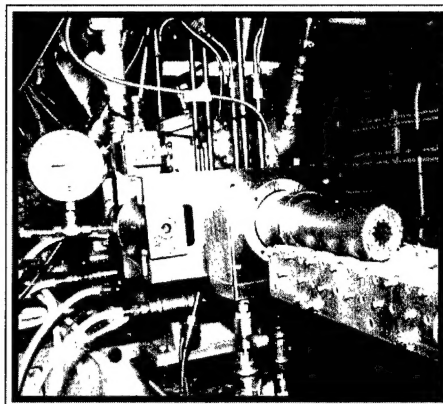


MISSION



We ensure operational readiness of United States and allied forces by providing technical capabilities necessary to rapidly move any "energetics" product from concept through production, to operational deployment. Our capabilities include: research, development, testing, and engineering; acquisition; manufacturing technology; manufacturing; industrial base, fleet, and operational support for warheads; explosives; propellants; pyrotechnics; energetic chemicals; rocket, missile, and gun propulsion systems; missile simulators, trainers, and test and diagnostic equipment; tri-Service cartridge-actuated devices, propellant-actuated devices, and aircrew escape propulsion systems; and other ordnance products.

Our capabilities provide technical expertise for special weapons, explosive safety, and ordnance environmental support. These technical capabilities and this expertise support all Naval warfare areas as well as the Army, Air Force, and private sector.



TENANT COMMANDS

The Indian Head Division (IHDIV) is home to several tenant commands which are separate organizations reporting through their own chain of command. They lease space and purchase services from the Indian Head Division host. Shown are the major tenant commands that reside at the Indian Head Division.

CHEMICAL BIOLOGICAL INCIDENT RESPONSE FORCE



Colonel Thomas X. Hammes
Commanding Officer

When directed, CBIRF forward-deploys and/or responds to a credible threat of a chemical, biological, radiological, nuclear, or high yield explosive (CBRNE) incident in order to assist local, state, or federal agencies and designated commanders in chief in the conduct of consequence management operations by providing capabilities for agent detection and identification; casualty search, rescue, and personnel decontamination; and emergency medical care and stabilization of contaminated personnel.

Personnel: military – 373, contractor – 12.



JOINT INTEROPERABILITY TEST COMMAND



Mr. Michael P. Mangan
Detachment Commander

The mission of the Joint Interoperability Test Command (JITC) is to formulate, implement, and direct a Command, Control, Communications, Computers, and Intelligence (C4I) test and evaluation program that provides comprehensive, objective, and accurate C4I system assessments and interoperability certification. JITC strengthens the operational effectiveness of the warfighter by providing C4I system assessments and technical support during exercises and contingencies.

Personnel: military - 38, civilian - 54, contractor - 110



NAVAL EXPLOSIVE ORDNANCE DISPOSAL (EOD) TECHNOLOGY DIVISION



Captain Daniel M. Renwick
Commanding Officer

The Naval Explosive Ordnance Disposal (EOD) Technology Division exploits technology and intelligence to develop and deliver EOD information, tools, equipment, and their life cycle support to meet the needs of joint service EOD operating forces and other customers.

Employees: military - 36, civilian - 184, contractor - 74



Jason C. Shaffer
Executive Director



NAVAL ORDNANCE SAFETY AND SECURITY ACTIVITY (NOSSA)



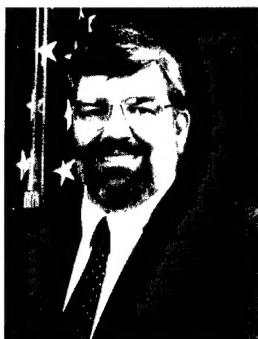
Captain Robert M. Honey
Commanding Officer

The mission of the Naval Ordnance Safety and Security Activity (NOSSA) includes publicizing and enforcing Navy explosives safety and ammunition physical security policies, directives, and standards; acting as the Navy's technical authority for explosives safety and as the principal authority on all matters related to naval ordnance transportation, safety, and security worldwide; developing and implementing the Navy explosives safety program; and providing support to the Navy ordnance environmental program.

Personnel: military - 4, civilian - 68, contractor - 5.



NAVAL SEA LOGISTICS CENTER, DETACHMENT ATLANTIC



Mr. Nate Fernandez
Director

The Naval Sea Logistics Center, Detachment Atlantic serves as the Naval Sea Systems Command (NAVSEA) center for applied information technologies and solutions for NAVSEA headquarters and field activities. The Detachment combines a thorough knowledge of Navy business practices integrated with Information Technology expertise to support and deliver products that strengthen fleet logistics, maintenance and modernization; as well as products that improve the financial and industrial operations of the Naval Shipyards. Additionally, the Center provides automated information systems security, testing and accreditation, and supports many NAVSEA headquarters corporate systems and initiatives. The facility provides a strong testing, prototyping, and operations environment for mission critical information applications for NAVSEA and the fleet.

Personnel: civilian - 130, contractor - 130.



Listed below are the additional tenant commands located at the Division:

EXPLOSIVE ORDNANCE DISPOSAL SCHOOL DETACHMENT.

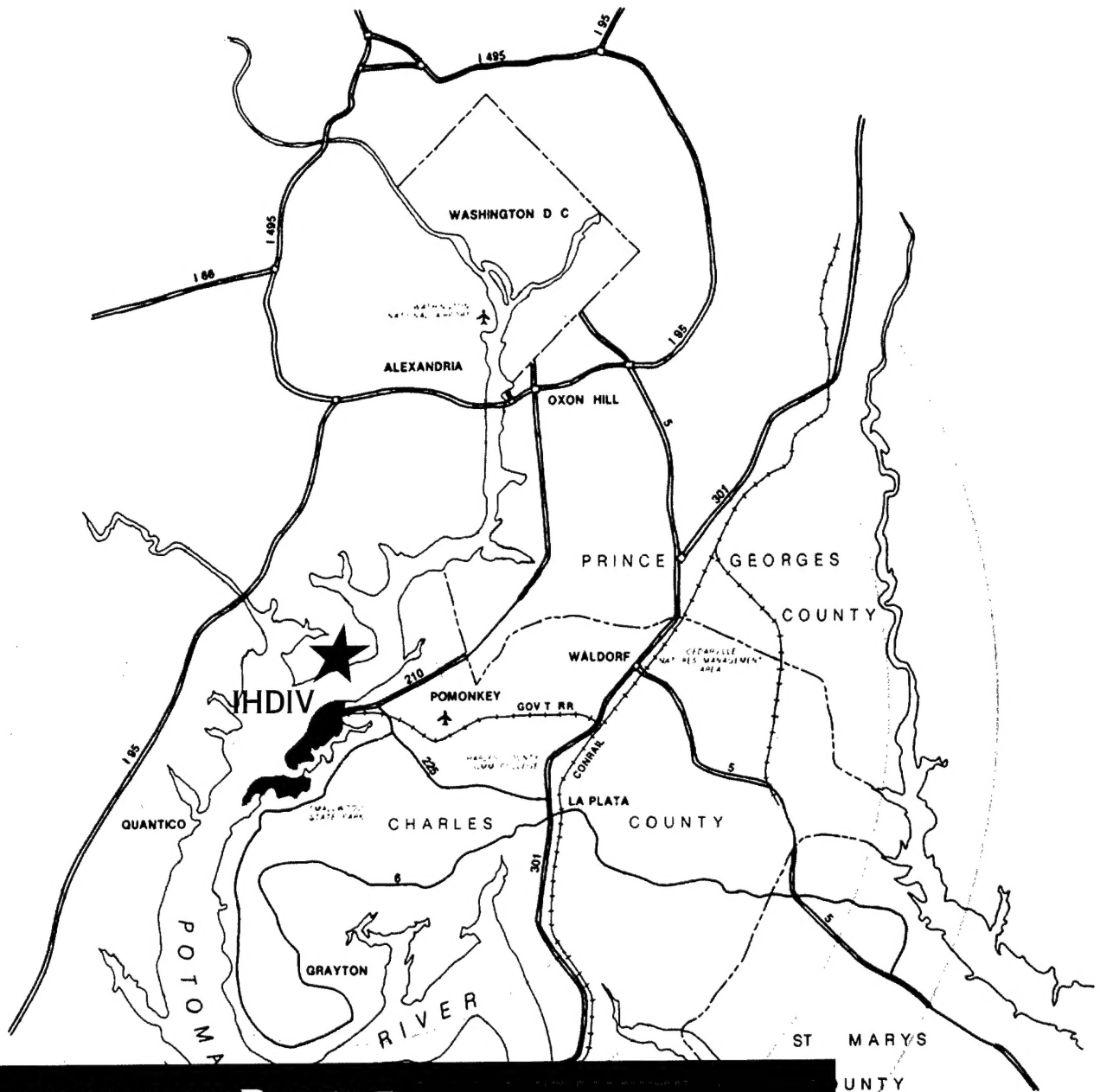
Provides instruction to explosive ordnance disposal technicians from all four services in advanced access and disablement and advanced explosive ordnance disposal management and technology. Personnel: military - 13, civilian - 1

BRANCH MEDICAL AND DENTAL CLINIC.

Keeps the uniformed services fit to meet all operational commitments; provides superb comprehensive healthcare supported by sound education, training, and research; enhances healthcare delivery by attending to the physical, spiritual, and emotional needs of our staff and patients. Personnel: military - 18, civilian - 3

RESIDENT OFFICER IN CHARGE OF CONSTRUCTION.

Administration and management of military and other construction contracts at Indian Head Division to meet the customers operational requirements; obtain quality facilities; be timely; and obtain the lowest reasonable cost. Personnel: military - 2, civilian - 9, contractor - 2



DEMOGRAPHIC PROFILE

- 3,410 ACRES
- 1,507 BUILDINGS
- 2,217 CIVILIAN EMPLOYEES (IH DIV - 1,756, TENANTS - 449)
- 517 MILITARY PERSONNEL (IH DIV - 23, TENANTS - 484)
- 800 CONTRACTORS (IH DIV - 467, TENANTS - 333)
- 548 MILITARY AND FAMILY MEMBERS LIVING IN BASE HOUSING
- \$95 MILLION IN MILITARY CONSTRUCTION PROJECTS INVESTED OVER THE LAST TEN YEARS (FY 91 - FY 01)
- \$1.57 BILLION PLANT ASSET VALUE
- \$81 MILLION INVESTMENT IN ENVIRONMENTAL COMPLIANCE AND PROTECTION INITIATIVES (FY 91 - FY 01)
- CHARLES COUNTY'S LARGEST EMPLOYER
- LOCATED 25 MILES SOUTH OF WASHINGTON, DC

HUMAN RESOURCES DISTRIBUTION

WHERE WE LIVE

	Number of Employees	% Employees
Maryland		
Anne Arundel County	14	0.8
Baltimore County	4	0.2
Calvert County	12	0.7
Carroll County	1	0.1
Charles County	1,029	58.6
Frederick County	1	0.1
Howard County	9	0.5
Montgomery County	39	2.2
Prince Georges County	154	8.8
St. Mary's County	86	4.9
Total MD	1,349	76.8
Virginia	191	10.9
Washington, D.C.	11	0.6
Other states*	205	11.7
Total	1,756	

*Other states include seven sites that report to the Indian Head Division base commander but are located at different locations:

- Packaging, Handling, Storage, and Transportation (PHS&T) Department, Earle, New Jersey
- Information, Appraisal & Analysis Department, Concord, California
- Quality Evaluation Technology Department, Concord, California
- Strategic Systems Evaluation Department, Seal Beach, California
- Airborne Weapons Evaluation Department, Yorktown, Virginia Explosive Engineering Division, Yorktown, Virginia
- Special Weapons, McAlester, Oklahoma

AVERAGE YEARLY SALARY BY AGE

AGE	AVERAGE SALARY	# EMPLOYEES
≤ = 25	\$36,380.92	61
26-30	\$50,210.92	46
31-35	\$51,844.75	120
36-40	\$57,953.68	335
41-45	\$61,512.06	309
46-50	\$57,591.59	330
51-55	\$61,999.39	307
55+	\$64,550.47	248
Average Salary	\$58,781.08	1,756
Total Salary	\$103,219,570.00	

Professional Degrees

EDUCATION LEVEL	NUMBER EMPLOYEES	% EMPLOYEES
Bachelor's degree	535	72.69%
Post Bachelor's	34	4.62%
First professional degree	2	0.27%
Master's degree	122	16.58%
Post Master's	5	0.68%
Post-sixth year	0	0.00%
Doctorate degree	29	3.94%
Post-Doctorate	9	1.22%
Total	736	

CIVILIAN PERSONNEL BY OCCUPATION TOTAL 1,756

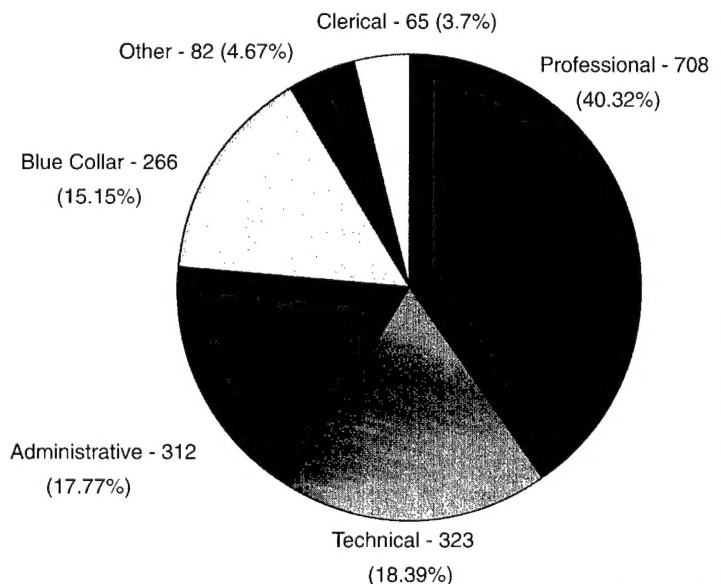
Administrative: Specialists (personnel, acquisition, equipment, training, etc.), administrative officers, technical writer/editors, budget analysts, management analysts, program analysts, and traffic managers, etc.

Clerical: Assistants, secretaries, and office automation

Other: Consists of student trainees, firefighters, guards and detectives

Professional: Engineers and scientists

Technical: Engineering technicians and other technicians



All personnel numbers on this page reflect IHDIV and detachments only.



BANKCARD AND CONTRACTS

The International Merchant Purchase Card (I.M.P.A.C) is a method of payment for small purchase actions below the small purchase competitive threshold of \$2,500. The I.M.P.A.C, also referred to as the "bankcard," is widely used throughout the Division and by its tenants. The bankcard allows us to purchase from any vendor who offers the most competitive price and accepts a government bankcard.

- Total sales: \$17,777,000 (monthly average \$1,481,417)
- Total transactions: 22,035 (monthly average 1,836)

The IHDIV currently has 25 cardholders in the technical codes warranted to use the purchase card up to \$25,000. When orders are placed between \$2,500 and \$25,000, a letter of agreement (LOA) is required and established with small business vendors who agree to permit the use of the purchase card as a method of payment for oral orders placed by these individuals. LOAs cannot be established with large business concerns. Small business vendors must also agree to bid on oral solicitations and to accept the terms and conditions normally associated with the procurement of commercial items. Cardholders warranted to use this method must complete, as a minimum, the NAVSUP Simplified Acquisition Course.

BUY MARYLAND PROGRAM

The Division is involved in a *Buy Maryland* Program, which facilitates the portion of the Federal Acquisition Streamlining Act of 1995 that legislatively allows oral purchases within the \$25,000 threshold to be placed within the local area. The goal of *Buy Maryland* is to increase business to local firms by developing a local vendor base able to provide goods and services in response to the needs of the Division. Through *Buy Maryland*, employees are encouraged to make their government bankcard purchases directly from the local community. The following depicts the total number of transactions and subsequent dollar figures since this program's inception:

- FY01: \$5,817,885 from 8,641 actions
- FY00: \$5,521,939 from 8,221 actions
- FY99: \$3,915,260 from 6,888 actions
- FY98: \$2,953,545 from 4,885 actions (1 April–30 Sept 1998, *Buy Maryland* established)

CONTRACTS FOR FY01

Total: \$271,460,074

This figure is tracked through the Integrated Logistics Support Management Information System (ILSMIS) and reflects all contracts between the IHDIV and outside vendors. This includes, but is not limited to, Public Works contracts, Bankcard (\$17,777,000) and Buy Maryland bankcard (\$5,817,885) transactions previously noted, as well as \$171,423 for training (training processed by the Training Office, special request classes and schedule on-site classes).

Awarded two military construction projects in FY 01:

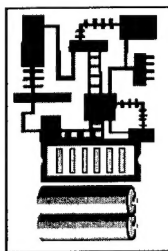
- P-110 Joint Services/EOD Equipment Support Facility, Stump Neck, \$6.1 million
- P-149 Annealing Oven Facility, \$6.5 million

PROGRAM HIGHLIGHTS

The Indian Head Division is known for its state-of-the-art facilities and personnel excellence. When combined, our expertise and facilities produce accomplishments that sustain and further our energetics mission. Following is a glimpse into the Division's technical achievements of 2001.

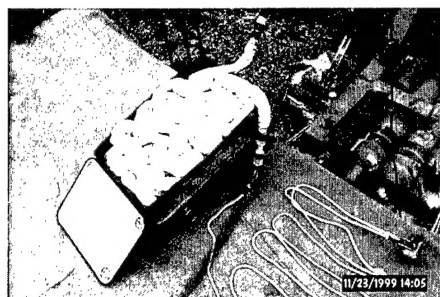
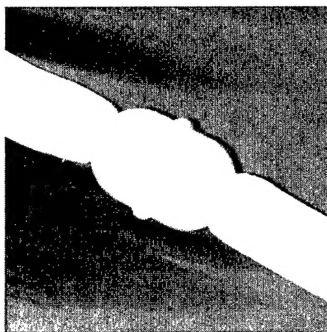
ATOS – ADVANCED TECHNOLOGY ORDNANCE SURVEILLANCE PROGRAM

Included in the FY2001 Advance Concept Technology Demonstrations (ACTD), the IHDIV's ATOS program was integrated as a new start project. Developing a hybrid radio frequency identification (RFID) electronic tag combined with a micro-electromechanical systems (MEMS) sensor array is the objective of this project. The first integrated sensor will measure temperature and humidity. When completed it will give the warfighter the ability to accurately locate and continuously determine the status of individual munitions on a near real-time basis, while providing data for predictions of their future conditions and performance with a high level of confidence. RFID tags will be integrated and affixed to various ammunition containers and pallets in a variety of storage and operational environments. The goals of the ACTD, beyond proof of concept, are selecting best-of-breed systems and peripheral equipment, determining service-specific requirements and associated integration requirements, and developing DOD-wide specifications for ultimate procurement and implementation.



PBXW-17 AND APOBS

As the lead laboratory for the Insensitive Munitions Advanced Development-High Explosive (IMAD-HE) Project, IHDIV has had a remarkable string of accomplishments: during the last 11 years, 13 new explosives have been deployed in over 43 weapons. A new RDX-based explosive added to the list, PBXW-17, received Navy qualification status in FY01 as a main charge explosive. Tested in the Anti-Personnel Obstacle Breaching System (APOBS), the material is being used as the main charge grenade



fill. APOBS is a man-portable system for breaching anti-personnel mines, primarily on land. The system comprises a line charge of evenly spaced grenades with a continuous

length of detonating cord. Transitioning explosive technology into weapons systems is considered the most important aspect of the IMAD Program. By the end of FY01, APOBS went into full production using PBXW-17 as the main charge grenade fill. PBXW-17 is another example of the remarkable success at Indian Head in developing and fielding new explosives that help the Navy realize an IM-compliant inventory.

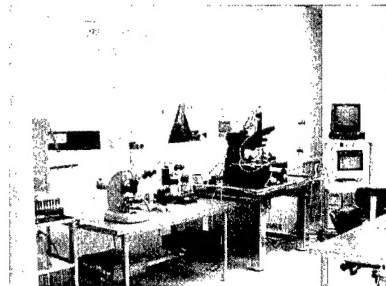
MEMS CLEANROOM

In August IHDIV officially opened the Microelectromechanical Systems (MEMS) Cleanroom—a facility that will allow IHDIV to continue its efforts in advancing research and development in this field. The Class 10,000 MEMS Cleanroom—the newest addition to the 21st century research facilities at IHDIV—will provide an environmentally controlled setting for R&D involving the integration of energetic materials (explosives and



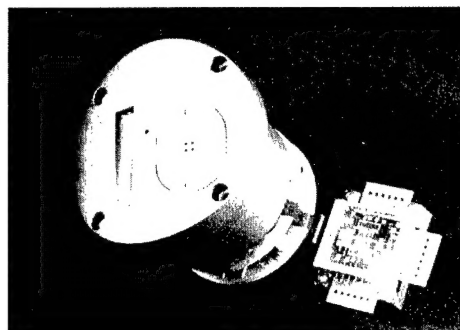
propellants), post-fabrication processing, MEMS prototype assembly and packaging, and full-scale testing. The opening of

the MEMS Cleanroom further secures IHDIV as the national hub for energetics research and a leader in MEMS research and development.



MEMS SAFETY AND ARMING DEVICE

IHDIV is developing Microelectromechanical Systems (MEMS) Safe and Arm (S&A) technology for future Navy undersea weapons. As an enabling technology for small, multi-mission torpedoes, MEMS technology reduces the size



of Navy S&As by ten times and provides high sensor accuracy, thereby improving torpedo capability. Recently a series of two MEMS S&A technology demonstration tests were con-

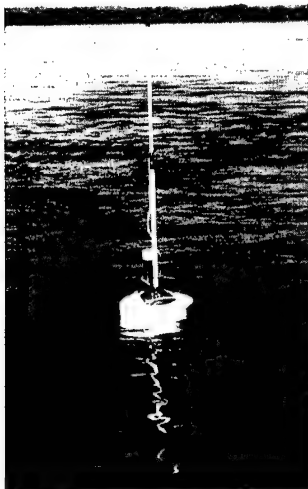
ducted in sea runs of 6.25-inch torpedo vehicles. The tests successfully demonstrated the functionality of MEMS S&A systems in actual torpedo environments. MEMS S&A technology will transition to the NAVSEA Canistered Countermeasure Anti-Torpedo Engineering and Manufacturing Development program scheduled to start in FY02.

VIRTUAL AT-SEA TRAINING INCLUDES IHDIV IMPASS SYSTEM



The IHDIV-developed Integrated Maritime Portable Acoustic Scoring and Simulator (IMPASS) has become an integral component of the Virtual At-Sea Training (VAST) system, a new effort of the Office of

Naval Research. A successful 30-day demonstration conducted in July showed that the VAST system is proving to be a viable alternative to live-fire training exercises. This innovative approach will enable Navy ships to conduct cost-effective, live-fire exercises and supplementary training at sea to prepare for forward area deployment and will provide related proficiency training during routine operations in theater.



The IMPASS concept is based on the recognition that any projectile, bomb, or missile will generate a detectable acoustic signature when it impacts water. The characteristics of this type of acoustic event can be detected and accurately located with available sensor and digital processing computer technology. Each system will be composed of acoustic sensors, which will be built into four sensor buoys. These buoys acting together will triangulate the location of any impact with an accuracy of ten meters in

relation to the firing ship for surface gunnery. A global-positioning satellite will provide precise positioning data of the buoys and firing platforms. Once detected, the data will be transmitted to the system controller unit located on the supporting platform for further processing. This is accomplished via radio frequency communication if line of sight, or low earth orbital satellite is over the horizon relative to the firing/launching platform.

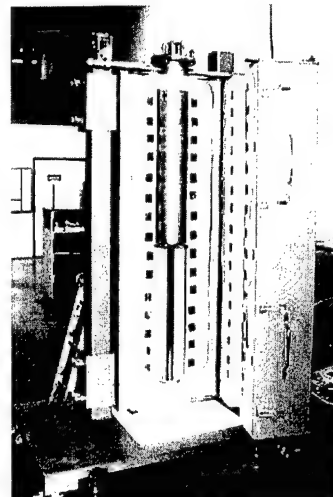
The July demonstration at the Dahlgren Potomac River test range was the first successful combination of live-fire training transitioned into a virtual environment. IHDIV will further the completion and development of IMPASS in FY03 when it becomes fully integrated into the VAST system with the addition of 3-D mapping and satellite communications.



MOLTEN SALT OXIDATION

The increasing restrictions placed on conventional methods of energetics disposal such as open burning and open detonation have lead to the research and development of alternative solutions. One solution being developed at IHDIV is molten salt oxidation (MSO). MSO is a flexible and efficient waste treatment solution that is a proven method for the thermal treatment of materials such as energetics, reactive metals, organics, and mixed radioactive wastes. IHDIV began developing this technology in 1996 with the installation of a 6-inch-diameter reactor to treat small amounts

of inert organic wastes and propellants. For this technology energetic waste and oxidizing air are introduced into a bed of molten salt. The molten salt oxidizes organic constituents to carbon dioxide and water while inorganic constituents are retained in the molten salt bed. The heat of oxidation keeps the salt molten, thus eliminating the need and cost for additional energy input. This past year the IHDIV MSO team successfully retrofitted a 12-inch-diameter MSO vessel to treat composite propellants. Feed rates of the system exceeded 10 pounds an hour, which is by far the highest rate achieved for dry energetics in the industry.



CONTINUOUS PROCESSING FACILITY

Design was completed and construction started in less than one year for the twin-screw extruder scale-up facility. This facility will house an 88-mm extruder that will allow Indian Head to scale up twin-screw processing technology by validating and quantifying the benefits of this technology as well as transitioning new materials from R&D into use while also providing the capability to support a variety of energetic requirements. The ultimate goal is to transition this process technology to industry to allow the Navy and DoD to realize all of the benefits of this revolutionary and lower cost processing technology.

AWARDS

DAVID PACKARD EXCELLENCE IN ACQUISITION AWARD

The CAD/PAD Supply Process Reengineering Team received the 2001 David Packard Excellence in Acquisition Award in the Navy category. This is the highest award



presented by the Department of Defense in recognizing and demonstrating great innovation and results in acquisition. The CAD/PAD Team was selected for reengineering the U.S.

Navy and Marine Corps process for ordering, processing, shipping, and receiving critical explosive components. CAD/PADs (cartridge- and propellant-actuated devices) are installed in escape, emergency, and recovery systems throughout naval aviation. These components are service life driven and must function perfectly every time to facilitate aircrew ejection and equipment operation or recovery and perform other functions during in-flight emergencies. The U.S. Navy and Marine Corps keep 175,000 CAD/PADs in inventory supporting 45,000 fleet maintenance transactions annually. The resulting effort reduced the CAD/PAD resupply time from 4 months to an average of 7.9 days within the continental United States. The fleet now orders under a 14-day lead-time and can rely on delivery. This project reduced fleet labor requirements by over 45 work years, generating a fleet cost avoidance of \$3.2 million annually, a significant achievement for a small program such as CAD/PAD. At the same time, the program was able to consolidate wholesale stock at a single stock point and reduce the global stockpile, while supporting a stable fleet maintenance requirement. The engineering team continues to prototype improvements to the process for ordering outside the continental United States. They are also working on web-ordering techniques to bring CAD/PAD resupply into the 21st century. As the CAD/PAD reengineering team demonstrated, with vision, resources, the right approach, dedication, teamwork, and perseverance, radical change is possible!

BINGHAM AWARD

The IHDIV Navy Exchange was the recipient of the 2000 Bingham Award for excellence in Navy Exchange operations in the U.S. for the small installation category

whose sales range from \$127,000 to \$943,000. This award is chosen through a highly competitive process that considers customer service, operating results, timely execution, support of Navy Exchange Service Command programs, and improvements. RADM Steve Maas, Commander of the Navy Exchange Service Command, came to Indian Head in September 2001 to present this award.



VANGUARD AWARD

The Extended Range Guided Munition (ERGM) Indian Head team was presented the PEO-(S) Vanguard Award of Excellence for their outstanding performance to develop and fabricate the Controlled Test Vehicle number one (CTV-#1), which was fired at White Sands Missile Test Range in January 2001. CTV-#1 was the first all-up round test of the Navy's

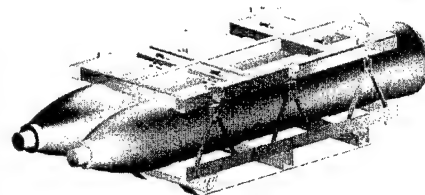
first gun-launched guided projectile, and this highly successful test culminates several years of extremely hard work by all members of the ERGM team. As a direct result of this team's commitment to excellence, attention to detail, and acumen as engineers and designers, CTV-#1 achieved all six primary objectives and was a complete success. The contributions made by IHDIV have paved the way to providing a formidable fire support projectile to the surface Navy.

2000 TEAM EXCELLENCE AWARD

Walter MacDonald, Indian Head Detachment Earle, Naval PHS&T Center, was a member of the Standard Missile Limited Maintenance Activity (LMA) Implementation Team that received a 2000 Team Excellence Award for providing exceptional support to the Program Executive Office for Theater Surface Combatants in the successful implementation of a Standard Missile LMA site at Yokosuka, Japan—the first ever. The team established processes and procedures to allow fleet inspection and refurbishment of Standard Missiles at the lowest levels possible while still maintaining round reliability. This capability reduces the number of missiles returned to depot-level maintenance facilities for minor corrective action, improves safety by reducing missile handling, and provides annual savings to the fleet through transportation and handling cost reductions. The team's outstanding efforts have resulted in maximized in-theater asset availability, ultimately improving fleet readiness.

STRAPLESS BOMB PALLET —NAVAL PHS&T DEPARTMENT, EARLE, NJ

The IHDIV Naval PHS&T Department, Earle Detachment won first place in the National Institute of



Packaging, Handling and Logistics Engineers (NIPHLE) Design Competition, Material Handling Device Category for the strapless bomb pallet. A PHS&T Center team, led by the design engineers and supported by engineers from Test & Evaluation, Systems and Acquisition, collaborated in producing this award-winning product. The strapless bomb pallet was designed in response to the Navy's critical need to develop ways to reduce shipboard manpower requirements, eliminate retrograde materials and solid waste, maximize stowage density, and lower weapon programs' total ownership costs. The pallet design features (bolt-on pivoting adapters, vertical bomb lug positioning, reduced footprint, nestable frames when empty, top frame direct interface with handling beam and sling attachment eyes) accomplish all of these goals by eliminating the need to add and remove steel



strapping, simplifying the bomb removal and assembly operations and reducing the number of slings needed for underway replenishment operations. In addition, the pallet is compatible with future automated or robotic bomb assembly operations. The award will be presented at the next NIPHLE Conference, 3-6 March 2002 in New Orleans.

TREE CITY USA AWARD



The Division has been given this national recognition for the sixth year in a row. Sponsored by the National Arbor Day Foundation in cooperation with the National Association of State

Foresters and the USDA Forest Service, this award recognizes communities for their ongoing urban forestry efforts. To become a "Tree City USA," a community must meet four standards: establish a tree board or department, enact a tree care ordinance, have a comprehensive community forestry program, and observe Arbor Day.

MARYLAND PLANT COMMUNITY AWARD

Sponsored by the Maryland Department of Natural Resources Forest Service and the Maryland Community Forest Council, this was the fourth consecutive year this award has been presented to the Division. This award is given to Maryland communities that are actively involved in tree planting.

PATENTS

The Constitution of the United States gives Congress the power to enact laws relating to patents, in Article I, section 8, which reads, "Congress shall have power ... to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."

The creativity and technical innovation of an organization may be measured with the number of patents filed. At Indian Head Division, scientists, engineers, and technicians are encouraged to take full advantage of the opportunities to patent novel materials, machines, and processes that they invent in the performance of their duties. These inventions benefit:

- The organization by reducing product cost and providing royalty income
- The inventor, who receives cash rewards and royalty income
- The community/society with new markets, industries, jobs, and safer, cheaper, higher quality products.

In FY01 the IHDIV was granted over 14 patents—an outstanding accomplishment for the year. The following is a brief listing of those awards.

PATENTS GRANTED IN FY 01:

- 6,131,518, entitled "System for Enhancing Target Damage by Water Jet Impact," by inventor Franklin D. Hains
- 6,165,295, entitled "Gas-Generating Liquid Composition (Persol 1)," by inventor Kerry L. Wagaman
- 6,173,650 B1, entitled "MEMS Energetic Actuator with Integrated Safety and Arming System for a Slapper/EFI Detonator," by inventors Donald R. Garvick, Lawrence C. Fan, Bruce R. Kuester, Gregory R. Birk
- 6,177,033 B1, entitled "Nitration of Organics in Carbon Dioxide," by inventors George W. Naufflett, Robert E. Farncomb
- 6,202,560 B1, entitled "Explosively Started Projectile Gun Ammunition," by inventor Raafat Guirguis
- 6,206,989 B1, entitled "Complexed Liquid Fuel Compositions," by inventor John P. Consaga
- 6,219,218 B1, entitled "Magnetic Flux Suppression System," by inventors John A. Nial, Jr., David De Leon, Nickolas Kaloterakis, T. William Ammons, Jr., Joseph Dulcey
- 6,230,491 B1, entitled "Use for Gas Generating Liquid Composition (Persol 1)," by inventor Kerry L. Wagaman
- 6,230,626 B1, entitled "Flashless Mk 66 Rocket Motor," by inventor Steven S. Kim
- 6,258,983 B1, entitled "Method of Preparing Solid Hydroxylamine Nitrate," by inventor Kerry L. Wagaman
- 6,261,082 B1, entitled "Self-Aligning Manual Die Set for Pressing Explosive Powder into Pellets," by inventor Phillip S. Ham
- 6,289,817 B1, entitled "Remote Controlled Payload," by inventors Anthony P. Quebral, Phillip R. Sturgill, Mindy W. Morack, David A. Culhane, Chris Batchelor
- 6,290,505 B1, entitled "Ballistic Performance Simulator," by inventor Ariel Federico Garcia
- 6,293,201 B1, entitled "Chemically Reactive Fragmentation Warhead," by inventor John P. Consaga



INVENTION DISCLOSURES

The IHDIV Invention Evaluation Board has evaluated the following invention disclosures and found them suitable for drafting patent applications, which are filed with the United States Patent and Trademark Office. Suitability was based upon the following rating factors:

- **Navy Needs/Requirements**—The degree to which the invention addresses a Navy need.
- **Feasibility/Use**—The degree to which the invention could be expected to be used by the Navy. Is it currently in actual use by the Navy?
- **Mission Relevance**—The degree to which the invention enhances the core technical capabilities or status of the Division.
- **Technological Advancement**—What is the relative significance of the invention? Is it a pioneering invention? Is this a significant or a marginal improvement in the art? Etc.
- **Degree of Development**—Has a working model been built? Has comparative testing been done?
- **Dual Use**—Potential for commercialization, licensing (for income to the command and the inventors), attracting partners, etc.
- **Affordability Impact**—To what degree could the invention be expected to reduce acquisition or life cycle costs?
- **Environmental Impact**—To what degree does the invention provide a positive impact on the environment or affects safety?

Navy Case 82,490, "Energetic Materials Desensitization Using Molybdenum Disulfide," by inventor R. Guirguis

Navy Case 82,667, "Oxygen Gas Generator for Breathable Air Supply," by inventor K. Wagaman

Navy Case 82,846, "Optical Fiber Based Sensor with Enhanced Signal-Event Fluorescence Measurement," by inventors G. Pangilinan, T. Russell

Navy Case 82,847, "Optical Gauge system for High Speed Measure of Transfer Pressures and Compressions," by inventors G. Pangilinan, T. Russell

Navy Case 82,795, "Venting System for 2.75-Inch Rocket Warhead," by inventors S. Kim, B. Krzewinski

Navy Case 82,816, "Perchlorate Concentrator Column," by inventors S. Kim, B. Krzewinski

Navy Case 82,954, "Non-Lethal Airbag Munition," by inventors A. Standback, S. Stapf, G. Prybyla

Navy Case 83,052, "Pelletized Nitrocellulose (PNC) Manufacture and Long term Storage," by inventor G. Naufflett

Navy Case 83,053, "Inexpensive Solid and Liquid Oxidizers," by inventor K. Wagaman

Navy Case 83,054, "Inexpensive, Insensitive, Throttleable Rocket Propulsion System," by inventor K. Wagaman

Navy Case 83,057, "Low Vulnerability Airbag Propellant," by inventor C. Walsh

Navy Case 83,060, "Afterburning Rocket Nozzle," by inventor R. Johnson

Navy Case 83,082, "A Modified Munroe Effect Using Liquids," by inventor R. Guirguis

Navy Case 83,116, "Versatile Pyrotechnic," by inventors J. Rose, D. Elstrodt

Navy Case 83,118, "Short Duration, High Torque Rocket Nozzle," by inventors S. Kim, E. Hawley

Navy Case 83,149, "Esters of Hydroxy Functional Polybutadiene as Propellant Binders," by inventors R. Gill, H. Adolph

Navy Case 83,156, "Non/Low Toxic Non-Hypergolic Propellant using Nanoparticle Boron," by inventor C. Fawls

Navy Case 83,182, "Explosively Started Projectile Gun Ammo II," by inventor R. Guirguis

Navy Case 83,194, "Triazolo-tetrazino Aminotriazine Salts," by inventors M. Sitzmann, W. Koppes

Navy Case 83,348, "Optical Vacuum & Location Device," by inventor P. Smith

Navy Case 83,384, "Univ. Binary Identification Code," by inventor K. Grote

Navy Case 83,409, "Segmented Rod Warhead," by inventors V. Carlson, T. Hennessey

Navy Case 83,414, "MEMS G-Sensor," by inventors G. Smith, L. Fan, R. Balestrieri

Navy Case 83,422, "TTAT Precursor," by inventors W. Koppes, M. Sitzmann

Navy Case 83,423 "TTAT Salt for Pharmaceuticals," inventors W. Koppes, M. Sitzmann

Navy Case 83,424, "TTAT Salt for Gas Generator and Propellant," by inventors W. Koppes, M. Sitzmann

Navy Case 83,425, "TTAT Salt for Dyes," inventors W. Koppes, M. Sitzmann

Navy Case 83,426, "TTAT Salt for Explosives," by inventors W. Koppes, M. Sitzmann

Navy Case 83,471, "Rocket Motor Exhaust Scrubber," by inventors R. Carns, G. Armstrong, R. Rast, D. Mitchell

Navy Case 83,482, "Al-Water Reactions for Underwater Mines," by inventor R. Guirguis

INTELLECTUAL PROPERTY ROYALTY RECEIVED IN FY01:

Navy license with Wickford Technologies, Inc., under patent application serial number 09/391,605, "Differential Pressure Flow Sensor," by inventor Michael Deeds.

Navy license with Arch Chemical, Inc., under Patent 5,223,057, "Monopropellant Aqueous Hydroxyl Ammonium Nitrate/Fuel," by inventors K. Mueller and M. Czesla.

COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS (CRADAs)

CRADAs are partnership agreements between a federal laboratory and non-federal partners (business, state, local government, or educational institutions) to jointly participate in a technology transfer or research and development activity. Under a CRADA, the government laboratories provide personnel, services, facilities, equipment, or other resources with or without reimbursement (but no funds to nonfederal parties). The nonfederal parties provide funds, personnel, services, facilities, equipment, or other resources toward the conduct of specified research and development efforts that are consistent with the missions of the laboratory.

CRADAs SIGNED IN FY01:

Non-Standard NCRADA-IHDNSWC-01-002

Research and Development of Explosively Driven Impactor Technology Applications, Lockheed Martin Advanced Projects (LMAP)

IHDIV and LMAP propose to work jointly to conduct research and development on Explosively Driven Impactor (EDI) technology that has application in military operations. Military uses that would be considered include beach obstacle

clearance, providing an active defense system for land combat vehicles, an active defense system for ship point defense, barrier breaching for urban terrain (MOUT) operations, tandem warheads in air-delivered or shoulder-fired weapons, and heavy strike unmanned aerial vehicles (UAV) for interdiction. The EDI would be an explosively driven plate developed by IHDIV. In the case of beach obstacle clearance, the plate would be fired from platforms such as UAVs and would devastate beach obstacles upon impact. For land combat vehicle protection, the EDI would be fired so as to intercept and divert or destroy kinetic energy penetrators fired by enemy forces against vehicles such as tanks. In like manner, the EDI could provide point defense for ships by intercepting anti-ship missiles so as to divert them from their intended flight path or destroy them on impact with the EDI. The EDI could play a role in MOUT operations by providing a breaching device capable of cutting very large holes in concrete wall barriers and chain link fence barriers. Tandem warhead concepts include an EDI as a primary warhead to breach targets and help a secondary warhead to be more effective; use as a secondary warhead in a tandem configuration; delivered to a target zone by an UAV and then fired against targets such as land combat heavy armor vehicles. IHDIV would provide the EDI demonstration units while LMAP would provide proprietary system concepts for concept test demonstration and employment. IHDIV will benefit from this joint development through research to continue to enhance their EDI technology. LMAP will benefit through access to the IHDIV EDI technology to support the development of systems for deployment by the military.

NCRADA-IHDNSWC-01-029

Research and Development of Software

Microsoft

Microsoft Corporation (Microsoft), Washington

The purpose of this agreement is to facilitate scientific collaboration between the professional staff at IHDIV and Microsoft for the purpose of developing Microsoft SQL Server 2000 and Microsoft SQL Server 2000 Windows CE Edition applications for the Navy. IHDIV plans to participate in Microsoft's Joint Developer Program. IHDIV has adapted and developed signature capture and verification software (using a Systems Developer's Kit using a hand-held Pocket PC running Microsoft Server CE). Microsoft has the interest, resources, and technical expertise to incorporate the Navy-developed work for DoD applications as well as in products intended for sale.

NCRADA-IHDNSWC-01-020

Research and Development of High-Energy, Dual-Angle Transmission X-Ray Techniques, Bio-Imaging Research, Inc., Illinois

IHDIV and Bio-Imaging Research will conduct tests for a cargo inspection system concept, which is based on high-

energy, dual-angle transmission x-ray techniques. If the concept proves successful, the inspection system may be used to detect social-ill and undeclared goods, namely drugs, arms, explosives, and contraband in large cargo containers. In addition, Bio-Imaging Research must successfully complete these tests to qualify for installing American-developed cargo scanning systems for Japanese customs facilities in Osaka and Kobe. Through its participation, IHDIV will be afforded an opportunity to evaluate Bio-Imaging's state-of-the-art transmission x-ray techniques. If the concept proves successful, IHDIV and the Navy benefit by evaluating its potential to identify critical defects and aid in addressing safety issues relating to naval ordnance items.

NCRADA-IHDNSWC-01-018

Research and development of Thermobaric Warhead Technologies, Talley Defense Systems, Inc.

Talley 
Defense Systems

This CRADA seeks to establish a cooperative relationship between the parties for research and development of advanced warhead and explosive materials concepts. The parties have extensive resources for research and development work in this area. Additionally, Talley is a proven manufacturer and marketer and has an established sales force, all of which would be available to support the commercialization of products developed. Similarly, IHDIV has R&D and manufacturing capabilities and is well known and respected in the defense community. The parties have particular strengths related to breaching. The parties also have existing technologies and products which, when merged, will provide state-of-the-art solutions to existing DoD requirements. Further, the developmental resources of the parties provide the potential to create and deliver innovative warheads and explosive capabilities in the future.

NCRADA-IHDNSWC-01-003

Research and Development of Modifications to Differential Pressure Flow Sensor (DPFS) for Various Governmental and Commercial Applications, Wickford Technologies, Inc. (WTI) Through an opportunity analysis study conducted by the University of Baltimore, various commercialization opportunities for the DPFS were identified and quantified. In order to maximize these commercial potentials, certain modifications to the technology may be necessary. These modifications may also develop additional governmental uses and applications not yet envisioned by the program manager. This agreement will allow both parties to conduct research and development of these modifications, while also providing WTI access to IHDIV facilities and providing IHDIV with the benefit of WTI expertise in product development and project management.

NCRADA-IHDNSWC-01-033

Development of Insensitive Explosive Loads for Foreign Warheads, Societa Esplosive Industriali SpA (SEI SpA)

The purpose of this agreement is to facilitate scientific collaboration between the professional staffs at IHDIV and SEI SpA for the purpose of developing insensitive explosive loads for foreign weapon systems. IHDIV's mission includes responsibility for the development of explosives and explosive charges for Navy application. SEI SpA is an ordnance manufacturer and is currently pursuing contracts for the replacement of conventional explosive fills with insensitive explosive fills for foreign weapon systems. IHDIV and SEI SpA will use this CRADA as a means for openly exchanging information and for pursuing development opportunities with foreign companies. IHDIV will benefit by obtaining information on the foreign warheads while evaluating the effectiveness of the warheads loaded with insensitive explosives for potential use by the U.S. Navy. SEI SpA benefits by the development of new products for commercialization in countries other than the USA. Both the United States and NATO armed forces will benefit from the improved safety characteristics of the new warheads as they work together in joint operations.

NCRADA-IHDNSWC-01-051

Development of Longer-range Wireless TASER Stand Alone and Imbedded in Munitions, SEI C-More Systems (SIGL)

The purpose of this agreement is to facilitate scientific collaboration between the professional staffs at IHDIV and SIGL for the purpose of developing and testing a longer-range wireless TASER. The collaborators shall provide personnel, facilities, and equipment necessary for, and shall perform the cooperative work. The objectives of the proposed work are to adapt the long-range TASER system to be deployed in remotely activated munitions.

NCRADA-IHDNSWC-01-001

Research and Development of Reactive Materials for Lethality Enhancement, General Sciences, Inc. (GSI)

The intent of this agreement is to enhance cooperation between GSI and IHDIV in order to develop novel energetic compositions containing reactive ingredients for increased lethality of existing Navy systems. The nature of the work will involve technical experts and test facilities from both parties familiar with reactive materials, which can play unique roles in the defeat of targets related to beach and surf zone clearance, Naval Surface Fire Support missions, ballistic missile defense targets, and bunkers and chemical/biological facilities as well as the development of advanced propulsion for extending the range and/or reducing the weight of existing systems. Lethality enhancement by utilization of advanced reactive materials has been demonstrated by GSI on several

Navy programs. The impressive success of these programs is the result of expert guidance from IHDIV. This agreement will allow both parties to conduct joint research and development of advanced reactive materials as propellants for enhanced lethality of Navy systems while also providing GSI with access to IHDIV facilities, some of which have unique capabilities.

NCRADA-IHDNSWC-01-044

Analysis and Scaleup of Energetic Ingredients and Formulations, BAE Systems – Ordnance Systems Inc. (BAE Systems)

This CRADA seeks to establish a cooperative relationship between the parties for research and development on the synthesis, scaleup, and commercial production of energetic ingredients and formulations. The parties have extensive resources for research and development work in this area. Additionally, BAE Systems is a proven manufacturer, marketer, and has an established sales force, all of which would be available to support the commercialization of products developed under this CRADA. Similarly, IHDIV is well known and respected in the defense community as a leader in the research and development on energetic but has limited manufacturing capability. In terms of benefits, as described above, the parties have particular strengths related to energetic synthesis, manufacture and formulation. The parties also have existing technologies and products which, when merged, will provide state-of-the-art solutions to existing DoD requirements. Further, the developmental resources of the parties provide the potential to create and transition innovative energetic manufacturing capabilities in the future.

NCRADA-IHDNSWC-01-011

Research and Development of Mine and Obstacle Defeat System Concept, The Boeing Company (Boeing)

The Office of Naval Research is currently seeking innovative Surf Zone and Beach Zone Countermining and Counter Obstacle technology concepts to support future naval warfare directions of power projection, Operational Maneuver From The Sea, Ship to Objective Maneuver, and Sea-based Logistics. These concepts must meet Navy requirements to conduct rapid standoff breaching and neutralization of all obstacles and/or all mine types in the surf zone and beach environments, and safely navigate the cleared area via amphibious landing craft.

The intent and nature of the work is for IHDIV and Boeing to conduct research and development on a concept that would lead to successfully neutralizing mines and obstacles on the beach and mines in the surf zone, with a 25-nm standoff. Essential to the concept is highly accurate delivery of the innovative IHDIV-developed payloads. IHDIV will develop

and test the mine clearing and obstacle clearing payloads. Boeing will also be responsible for system integration. The research and development of the parties will lead to full-flight demonstration. The benefit derived by IHDIV through this joint research and development will be the utilization of IHDIV-developed payloads for a standoff delivery system. The benefit derived by Boeing through this joint effort will be the accessibility of Navy experts and state-of-art payloads leading to the development of a commercially viable full standoff countermine and counter obstacle system.

COMMUNITY OUTREACH

For 111 years commitment to and involvement in the surrounding community has been a constant for the Division. Throughout the year, many occasions present themselves for leadership, personnel, and residents to show their support to the communities of Indian Head, Charles County, and Southern Maryland. Below are just a few examples of the Division's interactions that foster and strengthen its relationship with its neighbors.

STATE OF THE DIVISION



Hosted annually by the Western Charles County Business Association, this gathering is an opportunity for the Division to inform the local community of its achievements

and goals. This event was held in the fall and was marked by displays from all five major tenant commands and briefings from the Commander and the Executive Director.

UNITED IN SPIRIT TOWN-NAVY PARTNERSHIP

In its fifth year, "US—United in Spirit, A Town/Navy Partnership," has been the catalyst for co-sponsored events throughout the year. This partnership promotes mutual understanding between the town and the Navy and improves the overall quality of life for all who live or work in the town. Over the past year, this venture has supported the Fireball 4th of July Festival, National Night Out, and the first Rt. 210 10K Road Race.

COMBINED FEDERAL CAMPAIGN (CFC)

The 2001 campaign was another success, with employees generously donating over \$100,000. This yearly



campaign is the only authorized charitable fundraising campaign for federal employees, both civilian and military. Individuals have the opportunity to give to the charities of their choice, allowing them the opportunity to improve their own community.



SEASON OF GIVING HOLIDAY TOY AND FOOD DRIVE

In conjunction with the Charles County Department of Social Services Christmas Connection Campaign, the Division made the Christmas holiday an extra special occasion for families of Charles County by participating in the Season of Giving Toy and Food Drive. This

charitable drive ran one month, ending with a tree and Menorah lighting and holiday celebration. Three over-sized vehicles transported the donations that were collected from over 40 locations throughout the IHDIV and tenant commands. For the second consecutive year, the IHDIV has shown overwhelmingly its support for the Charles County community.

PHS&T CENTER HOSTS JUNIOR SCIENCE SYMPOSIUM TOUR

IHDIV Earle Detachment (Naval PHS&T Center) hosted a tour for a group of high school students and teachers involved in the Monmouth



Junior Science Symposium (MJSS). The tour of the PHS&T Center is one of 20 tours of university labs and government facilities offered by organizations that sponsor and support the symposium. Shown here, students observed demonstrations of the vibration equipment used for ordnance container testing at the PHS&T lab. The PHS&T Center is an active member of the executive committee of the MJSS that is responsible for the planning and administrative efforts for the yearly symposium. The symposium has been an annual

event for 39 years and is sanctioned by the Academy of Applied Sciences and funded by the Army Research Office, Office of Naval Research, and Air Force Office of Scientific Research

FIREBALL FESTIVAL

For the fourth consecutive year the Division, through its "US—United in Spirit" partnership with the Town of Indian Head, held the Annual Fireball Festival. This celebration for the Fourth of July took place at the Indian Head Village Green and included a classic car show, inflatables, games, entertainment, refreshments, and a fantastic fireworks display.

SUMMER YOUTH CAMP

In its fourth year, Camp Tomahawk offered a summer haven for over 100 youth. This summer program provided 10 weeks of camp offering a variety of activities such as swimming, baseball, fishing, dance, and various arts and crafts. This year specialty camps included two weeks of environmental camp, soccer, cheerleading, and softball.

NATIONAL NIGHT OUT

Under the umbrella of the US—United in Spirit partnership, the Division and the town of Indian Head partnered once again for a Town/Navy National Night Out. Proven to be an effective, inexpensive, and enjoyable program, this activity promotes neighborhood spirit and police-community partnerships in the fight for a safer nation. Over 600 people joined in this year's celebration, which was free to the public and included food, entertainment, children's activities, and lots of crime prevention and community information.



RED CROSS BLOOD DRIVE

The Division participated in two blood drives in 2001, in May and October. Collections were sent to the Greater Chesapeake and Potomac Region (covers DC, Baltimore, Baltimore County, eastern/southern sections of Maryland), which includes 90 hospitals. The drive in October was a community effort to bring aid to those affected by the September 11, 2001 tragedy.



TECHNICAL ASSISTANCE

The Division donated 26 computers to the Southern Maryland Research and Technology Consortium (SMARTCO). Since 1994, a total of 550 computer systems have been donated to 25 schools and education centers. We continually strive to access additional sources for distribution, to assist schools/educational centers in fulfilling needs and requirements for the benefit of children. Schools and education centers that receive IHDIV-donated equipment include:

Archbishop Neale Elementary
Bladensburg High ROTC
Career/Technology Center
Charles County Education Center
Education Options Program
Gale-Bailey Elementary
Indian Head Elementary
J.C. Parks Elementary
Jennifer Daniel of St. Thomas Elementary
Lackey High
La Plata High
Leonard Hall Jr. Naval Academy
Matthew Henson Middle
McDonough High and ROTC
Mt. Hope/Nanjemoy Elementary
Potomac Heights Christian Academy
Southern Maryland Research and Technology Consortium
Spring Dell Center, Inc.
St. Mary Ryken
St. Mary, Star of the Sea
St. Peter's Elementary
Tabb Middle School, Yorktown, Virginia
Thomas Stone High
Walter J. Mitchell Elementary
Yorktown Middle School, Yorktown, Virginia

STUDENT PROGRAMS

The Division continues to be very active in incorporating student programs throughout the workforce. Students are given the opportunity to grow and experience new and exciting work and are allowed to see and understand the work accomplished at the Division. These programs include the following:

STUDENT CAREER EXPERIENCE PROGRAM (SCEP)

Formally known as the Cooperative Education Program, the SCEP program provides study-related, fully paid employment for students. This program is conducted in accordance with a planned schedule and a working agreement between the Division, the educational institution, and the student. Students must be enrolled in the SCEP at their college and maintain a

2.0 GPA. Currently, 19 students are taking advantage of this program.

STUDENT TEMPORARY EMPLOYMENT PROGRAM (STEP)

Students enrolled in the STEP must be at least 16 years of age and attending high school or college on at least a part-time basis. This program enables them to earn a salary and valuable work experience while continuing their studies. The individual departments pay the student's hourly wage, plus annual and sick leave. The appointed positions are not to exceed one year, but if the opportunity presents itself, students may be reassigned or apply for permanent employment (directly to an announcement). Currently, 40 students are enrolled in this program.

COMMUNITY AND SCHOOLS TOGETHER (CAST)

CAST is a high school career and life skills program designed to assist special education students with learning to live independently and make decisions about the world of work. Each year the Division hosts CAST tours so that students can witness, first-hand, career possibilities at the facility. This year the Division hosted two visits for area high school students.

SUMMER YOUTH PROGRAM

Sponsored by the Charles County Board of Education, the Summer Youth Program placed four students at the Division in 2001. Providing disadvantaged students the opportunity to gain valuable work experience, this program is free to employers (the Charles County Board of Education pays their salary) and lasts approximately six weeks. To be eligible, the student must attend a Charles County school and meet requirements for disadvantaged students, be recommended by a teacher, be 16 to 19 years of age, and be interviewed by the Charles County Board of Education Summer Youth Program coordinators.

VOLUNTEER PROGRAMS

SCIENCE FAIR JUDGES

For well over 30 years, Division employees have been a mainstay participating as judges for the Charles County Science Fair.

Throughout February and March 2001, over 130 Division employees donated their time judging entrees at individual



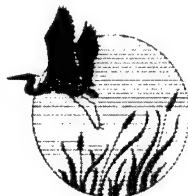


county schools as well as the county-wide competition. In addition to judging, the Division presents special awards recognizing top projects in applied science, environmental science, engineering, and physics categories.

POTOMAC RIVER BEACH CLEANUP

Held the first Saturday in April, this event is the kick-off to the Division's month-long recognition of protecting the environment. April 1 marked the Thirteenth Annual Indian Head Division Potomac River Beach Cleanup. Supported by the Chesapeake Bay Trust, over 50 volunteers successfully removed over 1,300 pounds of trash from the IHDIV's shoreline. The goal

of this program is to clean the watershed affecting the Chesapeake Bay. As trash and debris is removed from local rivers, creeks, and streams, the water quality of the bay is greatly improved.



CHRISTMAS IN APRIL

Members of the IHDIV Professional Development Council (PDC) participated in Christmas in April as part of a volunteer group who worked on one local house in Indian Head. The all day effort included replacing windows and doors, repairing window glass, painting the exterior of the home, and yard clean-up. Christmas in April is a celebration of people coming together to build a better community. With the volunteer efforts of these folks, Christmas comes twice a year for county residents.



RECREATIONAL EVENTS

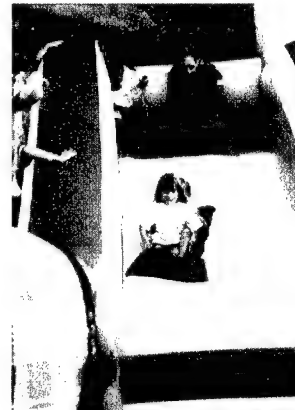
MORALE, WELFARE AND RECREATION (MWR)

MWR plays a vital role in supporting the Division and the community. Below are some programs MWR has available:

- Supports Little League by providing field, maintenance,

and advertising.

- Supports a swim team.
- Provides a pool on selected evenings for the town's private use.
- Provides football, soccer, softball, and baseball fields along with volleyball courts and a gymnasium on a space-available basis to local youth and adult sports leagues.
- Conducts a summer concert series.
- Promotes town/Navy partnership events in the *Arrowhead/Flash Point* insert.
- Hosts annual softball tournaments in the summer.
- Offers various sports, fitness, and other recreation events.
- Partners with the Town of Indian on a variety of events throughout the year under the US-United in Spirit partnership. 2001 events included Fireball 4th of July Festival, National Night Out, and the IHDIV, Rt. 210 10K road race.



ENVIRONMENTAL CAMP

For two weeks during the summer, the Bullitts Neck Environmental Education Center was home to over 30 children. The two 1-week sessions featured educational games, field trips, tree identification and paper-making, wetland ecology, forestry, fish seining and identification, and animal adaptation. Added activities included arts and crafts, canoeing, swimming, campfire stories, games, songs, and an overnight campout.



SAFETY AND LAW ENFORCEMENT

The Division has a memorandum of understanding with the Charles County Department of Social Services with respect to protective service issues and joint investigations that stem from domestic violence and protective service complaints. We have an agreement with the Maryland State Police to provide medical emergency support (helicopter transport) and escort support for the IHDIV tenant command, CBIRF.

NEIGHBORHOOD WATCH PROGRAM

This is an ongoing crime prevention program that establishes a network of local residents interacting with the Law Enforcement Division and each other to prevent and deter crime. A newly established Community Oriented Policing Unit works with the neighborhood residents to prevent crime and provide support for the resident and employee population with crime statistics, training, youth support, community awareness bulletins, neighbor dispute resolution, and quality of life events.

FIRE PROTECTION/ HAZARDOUS MATERIALS RESPONSE



A mutual aid agreement with Charles County Emergency Services allows us to provide unique and additional fire-fighting and hazardous materials support

to the community. The IHDIV hazardous materials response capability includes extensive personnel training, a large inventory of spill and emergency response supplies, equipment, and vehicles for land and water. A thermal imaging camera was recently obtained to enhance our search, rescue, and hazmat capability. The IHDIV facilitates numerous training opportunities and classes in addition to fire prevention/safety programs and tours for personnel and special interest groups such as local school children and first responders.

EMERGENCY MEDICAL RESPONSE

The Fire Department EMS personnel provides advanced life support coverage for the division and support to the surrounding community through our mutual aid agreement with Charles County. This has provided additional training and certification of our personnel and significantly enhanced the capability of our department in life-threatening situations. Additionally our EMS personnel conduct training classes in CPR and first aid and child safety seat inspections.

DISASTER PREPAREDNESS

The Fire Department is tasked with overseeing the Division's disaster plan, which includes coordinating with local, state, and other officials to maintain, exercise, and execute emergency management plans. The Fire Chief serves as the Division liaison to the Charles County Local Emergency Planning Committee (LEPC).

CLUBS AND ORGANIZATIONS

TOASTMASTERS INTERNATIONAL CLUB No. 3173

The Energetic Toastmasters Club has been chartered at the Division for over 35 years. Toastmasters International is the leading movement devoted to making effective oral communication a worldwide reality. Toastmasters Clubs provide a mutually supportive and positive learning environment in which every member has the opportunity to develop communications and leadership skills, which in turn foster self-confidence and personal growth.

CUB/BOY SCOUTS

Boy Scout Troop 253 and Cub Scout Pack 421 were established over 50 years ago. They are the only scouts in Southern Maryland that have their very own Scout Hut. The Scouts are involved with many activities. They assist with the Potomac River cleanup effort and participate in fishing derbies, hiking, and mountain climbing. They also participate in the food drive for the needy in Charles County.



NATIONAL DEFENSE INDUSTRIAL ASSOCIATION (NDIA)

The NDIA is a nonprofit, educational membership association. The basic mission is to promote the security of the United States by fostering awareness of and support for a United States technological/industrial infrastructure that is capable of responding to any global changes. Under the auspices of NDIA, industry and government come together to exchange ideas, develop technology, and produce dependable, effective defense products. NDIA will remain the pre-eminent defense association for the government and the industrial base through dedication to education, technology advancement, and future national security.



LOCALLY BASED BUSINESS PARTNERS

Following is a list of companies based in Maryland, Virginia, and the District of Columbia that provide a source for commercially available products and services to IHDIV.

21ST CENTURY BUSINESS CONSULTANTS, INC.
 A B TECHNOLOGIES, INCORPORATED
 A C SCHULTES OF MARYLAND
 ADI TECHNOLOGY CORP.
 ADVANCED ENGINEERING AND SCIENCES
 ADVANCED RESOURCE TECHNOLOGIES, INC.
 ADVANCED TECH RESEARCH, INC.
 AIM, INC.
 AIR QUALITY MANAGEMENT CORP.
 ALLFIRST LLC
 ALLIANT AMMUNITION AND POWDER COMPANY
 ALLIED SAFETY SUPPLY CO.
 ALLSTATE LEASING, INCORPORATED
 AMERICAN POWDER LLC
 ANGEL SYSTEMS, INCORPORATED
 ANTEON CORPORATION
 AOT MARYLAND, INC.
 APPLIED ORDNANCE TECHNOLOGY, INC.
 ARCTECH, INC.
 ARNOLD'S FACTORY SUPPLIES
 AUTO ZONE
 BAUM ROMSTEDT TECHNOLOGY RESEARCH
 BECHTEL NATIONAL, INCORPORATED
 BEST LOCKING SYSTEMS OF WASHINGTON, INC.
 BETA ANALYTICS, INCORPORATED
 BLAYDES LOCK CO.
 BLUE RIDGE NUMERICS, INC.
 BOB LAWRENCE AND ASSOCIATES, INC.
 BOOZ ALLEN AND HAMILTON, INC.
 BRANCH ELECTRIC SUPPLY COMPANY
 BRANDYWINE SALES AND SERVICE
 BRYANS ROAD BLDG. SUPPLY CO., INC.
 BUCHANANS TUBE BENDING COMPANY, INC.
 C T L COMMUNICATIONS TELEVIDEO, LTD.
 CAMDEN PUMPS AND SYSTEMS LLC
 CANON USA, INC.
 CAREER PLANNING AND DEVELOPMENT
 CENTRAL ARMATURE WORKS, INCORPORATED
 CHAINSAW WIZ TREE SERVICE, INC.
 CHARLES COUNTY GOVERNMENT
 CHARLES COUNTY HEALTH DEPARTMENT
 CHESAPEAKE ANALYTICAL LAB., INC.
 CHESAPEAKE CORP.
 COLLEGE OF SOUTHERN MARYLAND
 COLUMBIA RESEARCH CORP.
 COMCAST CORP.
 COMMONWEALTH DIGITAL OFFICE SOLUTIONS
 COMPUTER & SCALE TECH. SERVICES
 COOKE, W H AND CO.
 CORPORATE EXPRESS
 CORTANA CORPORATION
 COYNE CHEMICAL CO., INC.
 CREATIVE APPLIED TECHNICAL SYSTEMS, INC.
 CRUZ ASSOCIATES, INCORPORATED
 DCS CORPORATION
 DEFENSE GROUP, INC.
 DELAWARE CORNERSTONE BUILDERS, INC.
 DELMAR SYSTEMS, INCORPORATED
 DESBUILD, INCORPORATED
 DESIGNERS AND PLANNERS, INCORPORATED
 DIAMOND PAPER CORP.
 DIGGING & RIGGING SERVICES
 DIGITAL SYSTEMS INTERNATIONAL CORP.

DLT SOLUTIONS, INCORPORATED
 DRS ELECTRONIC SYSTEMS, INC.
 DTI ASSOCIATES, INC.
 DYN CORP.
 DYNAFLOW, INC.
 DYNAMIC SYSTEMS, INC.
 EARTHDATA INTERNATIONAL OF MARYLAND
 EDGEMARK SYSTEMS, INC.
 EG AND G WASHINGTON ANALYTICAL
 EGAN, MCALLISTER ASSOCIATES, INC.
 EILDON ASSOCIATES LLC
 ELY'S REAL ESTATE LEASE
 ENERGETIC MATERIALS TECHNOLOGY
 ENSCO, INC.
 ENTERPRISE ENGINEERING, INCORPORATED
 ENVIROVISIONS, INC.
 EVANS, LAURENCE M.
 EXCELL MANAGEMENT
 EXECUTIVE INFORMATION SYSTEMS LLC
 FAXPLUS, INCORPORATED
 FERGUSON ENTERPRISES, INC.
 FLOORING MAX OUTLET
 FREEMAN ELECTRIC COMPANY, INC.
 FRENCH CONSTRUCTION SERVICES, INC.
 FRISCH KORN, INCORPORATED
 FUTURE TECHNOLOGIES, INC.
 GARCIA INFORMATION SYS. CORP.
 GEM SPECIALTIES, INCORPORATED
 GENERAL SERVICES ADMINISTRATION
 GETRONICS GOVERNMENT SOLUTIONS LLC
 GILFORD TECHNOLOGY CORPORATION
 GOVERNMENT AND COMMERCIAL SUPPLY, INC.
 GOVERNMENT SCIENTIFIC SOURCE, INC.
 GRYPHON TECHNOLOGIES LLC
 GSTEK, INC.
 GTSI GOVERNMENT TECHNOLOGY SERVICES
 GUY BROTHERS MARINE
 HARLEY VALVE
 HERCULES, INCORPORATED
 HEWLETT-PACKARD CO.
 HISTORY ASSOCIATES, INCORPORATED
 HOLIDAY INN OF WALDORF
 HONEYWELL, INCORPORATED
 HUGH C. GARDINER, INCORPORATED
 HUGHES SUPPLY
 HUNGERFORD & ASSOCIATES
 IKTARA AND ASSOCIATES
 IMAGE CONTROL, INCORPORATED
 INDIAN HEAD TOWN HALL
 INFORM BUSINESS SYSTEMS
 INFORMATION TECHNOLOGY & COMMUN. DIV.
 INTEGRATED MANAGEMENT STRATEGIES, INC.
 INTELLIGENT DECISION SYSTEMS, INC.
 INTELLIGENT DECISIONS, INC.
 INTERNATIONAL CHEMSTAR, INCORPORATED
 IRA F. JAFFE, ESQUIRE
 ISSI, INC.
 J AND J LAWNS & LANDSCAPING, INC.
 J.C.'S OUTBOARD AND MARINE
 JACOBS GARDINER, INCORPORATED
 JEROME H. ROSS, ESQUIRE
 JIL INFORMATION SYSTEMS, INC.
 JOHNS HOPKINS UNIVERSITY
 JPH ENGINEERING
 JTAG TECHNOLOGIES, INCORPORATED
 KAESER COMPRESSORS, INCORPORATED
 KAPLAN, IRWIN
 KELLY HVAC, INCORPORATED
 KENT, LTD.
 KOCH ASSOCIATES, INC.
 LA PLATA MILL AND SUPPLY CO., INC.
 LEADING EDGE EMPLOYEE ASSISTANCE PROG.

LEE GUNN
 LIBERTY OFFICE SUPPLY
 LOCKHEED MARTIN ADVANCED PROJECTS
 LOGISTICS MANAGEMENT INSTITUTE
 LOWE'S
 M & W DISTRIBUTION COMPANY, INC.
 M AND D MACHINE CO.
 M.C. DEAN, INC.
 MAC MACHINE CO., INC.
 MACHINECRAFT, INC.
 MADEN TECH. CONSULTING, INC.
 MANAGEMENT SUPPORT TECHNOLOGY, INC.
 MANPOWER TEMPORARY SERVICES
 MANTECH SYSTEMS ENGINEERING
 MANUFACTURING ENGINEERING SYSTEMS, INC.
 MARYLAND CHEMICAL CO., INC..
 MARYLAND CLAIMS INVESTIGATION, INC.
 MARYLAND DEPARTMENT OF THE ENVIRONMENT
 MARYLAND ELEVATOR SERVICES, INCORPORATED
 MARYLAND FIRE EQUIPMENT
 MATTOS, INC.
 MAURICE ELECTRICAL SUPPLY COMPANY
 MAXCESS LIBRARY SYSTEMS, INC.
 MCCORMICK PAINT WORKS CO.
 MCKINNEY AND COMPANY
 MELWOOD HORTICULTURAL TRAINING CENTER
 METTERS INDUSTRIES, INCORPORATED
 METTLER TOLEDO, INC.
 MINOLTA CORP.
 MONTEREY BAY CORPORATION
 MOTROL ELECTRICAL EQUIP. CORP.
 NALCO CHEMICAL CO.
 NATIONAL ENVIRONMENTAL POLICY INSTITUTE
 NATIONAL MICROGRAPHICS SYSTEMS, INC.
 NATIONAL TECHNOLOGIES ASSOCIATES, INC.
 NCG, INC.
 NITINOL CONSULTING SERVICES
 OC, INCORPORATED
 OFFICE OF ENGINEERING CAREER SERVICES
 ORACLE CORP.
 PANGBORN CORPORATION
 PARALLAX, INCORPORATED
 PHASE, INC.
 PHH VEHICLE MANAGEMENT SERVICES CORP.
 PIEDMONT PUMP AND PRODUCT, INC.
 PIONEER NETWORK, INC.
 PITNEY-BOWES, INC.
 POLYMER SOLUTIONS, INCORPORATED
 POTOMAC ELECTRIC POWER COMPANY
 POTOMAC TESTING, INCORPORATED
 PRC, INC.
 PROTOCAD CORPORATION
 QVINTA, INC.
 R E MICHEL COMPANY
 RADIAN INTERNATIONAL LLC
 READ PLASTICS, INC.
 REP-TRON, INC.
 RESEARCH PLANNING, INC.
 RESOURCE MANAGEMENT CONCEPTS, INC.
 RICHARD EARLY MICHELS
 RICHARD I. BLOCH, ESQUIRE
 ROBOTICS SYSTEMS TECHNOLOGY

ROCKINGHAM PRE-CAST
 RODGERS BROTHERS CUSTODIAL SERVICE, INC.
 ROD'S WINDOW CLEANING SERVICE
 ROGER T DYSON TELECOMMUNICATIONS
 RS INFORMATION SYSTEMS, INC.
 S3 LTD
 SAFEWARE
 SCAFFOLD RESOURCE
 SCIENCE APPLICATIONS INTERNATIONAL CORP.
 SHARNOFF, JOSEPH
 SHERIKON, INC..
 SHERWIN-WILLIAMS
 SIGN LANGUAGE ASSOCIATES
 SIGNAL PROCESSING SALES, INC.
 SILICON GRAPHICS FEDERAL
 SINE-LANDIS COMMUNICATIONS, INC.
 SKIPPER & ASSOCIATES
 SNOW VALLEY WATER COMPANY
 SONIX, INC.
 SOUTHERN MARYLAND ELECTRIC COOPERATIVE
 SOUTHERN MARYLAND INTERPRETING SERVICES
 SOUTHERN POLICE SUPPLY, INC.
 SPACE APPLICATIONS CORP.
 STATE CHEMICAL MANUFACTURING COMPANY
 STATE OF MARYLAND
 STK ENTERPRISES
 STRATFORD SAFETY PRODUCTS
 STRICKER AND CO.
 SUZANNE R. BUTLER
 SWEET ANALYSIS SERVICES, INCORPORATED
 TAYLOR J F, INCORPORATED
 TELOS CORP.
 TELTRONIC, INCORPORATED
 TENCARVA MACHINERY CO.
 THE BECHDON COMPANY
 THE ENVIRONMENTAL COMPANY, INC.
 THE HOME DEPOT
 THE ZOLDAK GROUP, INC.
 TIDEWATER MACHINE CO.
 TILLEY CHEMICAL COMPANY, INCORPORATED
 TITO CONTRACTORS
 TOUSIMIS
 TRITON METALS, INC.
 TYX CORPORATION
 U S A WASTE
 UNITED ELECTRIC SUPPLY COMPANY
 UNITED REFRIGERATION, INCORPORATED
 UNITED STATES CAN COMPANY
 UNIV SYSTEMS AND TECHNOLOGY, INC.
 UNIVERSITY OF MARYLAND
 URS GROUP, INC.
 VATELL CORPORATION
 VERIDIAN ENGINEERING, INC.
 VERIZON
 VIM TECHNOLOGIES, INC.
 VSE CORPORATION
 WALDORF CAB COMPANY
 WAL-MART
 WAREONEARTH, INC.
 WHITAKER BROTHERS BUSINESS MACHINES, INC.
 WM. D. EUILLE AND ASSOCIATES
 WOOLPERT LLP



ENVIRONMENTAL

As a federal facility the Indian Head Division is committed to the protection and conservation of natural and cultural resources while practicing scientific principles of multiple use. Our Natural and Cultural Resource Management Programs are divided into several functional areas, which include land, forest, fish and wildlife, cultural resource management, outdoor recreation and environmental education. These programs were developed to preserve the natural heritage of the area and responsibly coordinate ecological management with the mission of the IHDIV. The pictures on this page are just a few examples of how the IHDIV contributes to the preservation of the environment in fulfilling the goals of the Natural and Cultural Resource Management Programs.



OSPREY
RELEASE



STREAM SURVEYING



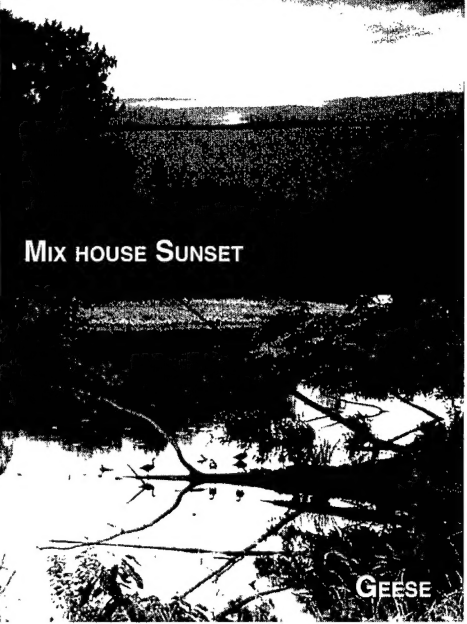
WILD TURKEYS



WATER QUALITY SAMPLING



MARINA



MIX HOUSE SUNSET



ELECTROFISHING



BLUEBIRD

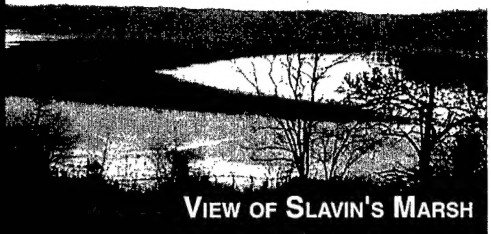
PUMPKINSEED



YOUNG
RED-SHOULDERED
HAWK



RED-
TAILED
HAWK



VIEW OF SLAVIN'S MARSH

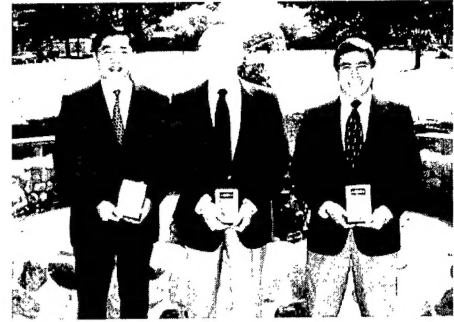
*This page is dedicated to the Honorary Employee Award Winners of FY01.
Congratulations to all of these outstanding employees.*



Co-op of the Year,
Leanne Heise,
Corporate Operations



Internal Customer Service Award
Janet M. Johnson, Weapons Department
Holly A. Boswell
Human Resources Department



Dr. Horst Adolph Award for Outstanding Patent
L. Fan, D. Garvick, R. Balestrieri, (not pictured:
Dr. H. L. Last, G. R. Laib, C. S. Reams,
L. Montesi, B. Will, D. Hinely)



ADM Harold L. Stark Award for Innovation
Micro-Electromechanical Systems (MEMS) Technology Team



Roger M. Smith Team Award
Continuous Processing Scale-Up Facility MILCON Contract Team



Cost Reduction Award
F/A-18E/F CAD/PAD Team



**Audubon Award for
Environmental Improvements**
Molly Tominack
OESO



**Captain H.E. Lackey Award
for Community Service**
Stephen E. Mitchell
Deputy Director of Technology



**Equal Employment
Opportunity Award**
Scott E. Bumgarner, CAD/PAD Dept
Thomas H. Cox, Public Works Dept



**Koehler Award for Quality of Life
Enhancement**
IHDIV Seabees: CE1 Curtis, UT1 Peterson,
UT2 Russell, BU2 Blanchard, BU2 Teagle



**Joe L. Browning Award for
Managerial Excellence**
Dennis E. Tucker
Ordnance Department



**Dr. George W. Patterson Award for
Outstanding Accomplishment**
John H. Ferguson
Weapons Department



Dashell Award for Excellence
Kathy Timmerman
Corporate Operations

YEAR IN REVIEW FY 01

The point of contact for information contained in this report is:

CHRISTINA ADAMS, APR

PUBLIC AFFAIRS OFFICER

DIRECTOR OF CORPORATE COMMUNICATIONS

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Please note: Where possible, numbers reflect Indian Head Division plus tenant command employee population. The United States Government fiscal year (FY) runs from 1 October through 30 September (FY 01 = 1 October 00 - 30 Sep 01).